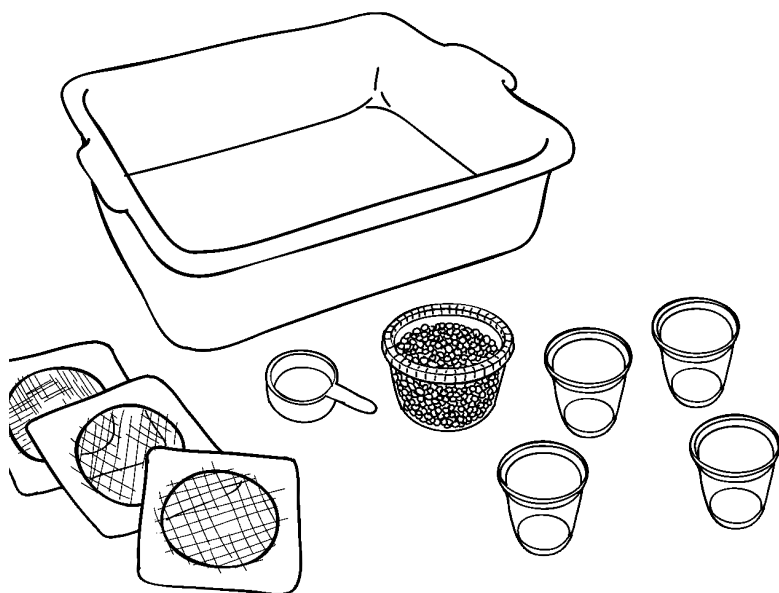


# ASSESSMENT

## SOLIDS AND LIQUIDS



**NOTE:** This edition is the result of collaboration among FOSS staff at Lawrence Hall of Science, the Science and Math Education Resource Center (SMERC) at ESD 112, and many dedicated teachers in Washington State.

The Washington Edition was made possible by the generous support of the following organizations: Delta Education; Educational Service District 112; Eisenhower Funding; Hewlett-Packard; Intel; Lawrence Hall of Science at the University of California, Berkeley; Washington State School Districts; and Washington State University, Vancouver.

### ASSESSMENT CONTENTS

Investigations 1 – 4	2
End-of-Module Assessment	30
Assessment Blueprint	36

This folio contains a variety of resources that help teachers assess student progress in reaching Grade Level Expectations (GLEs) as outlined in the Essential Academic Learning Requirements for science. These materials have been designed for Washington State teachers using the 2000 edition of FOSS. Look in the Assessment Overview, available at [www.smerc.org](http://www.smerc.org), for more on how to use these classroom-based assessments.

Scoring guides for each of the assessments begin on page 4, using a +/✓/– rubric.

- + going beyond expectations
- ✓ meeting expectations
- below expectations

### INVESTIGATION DUPLICATION MASTER CHANGES

#### New student sheets

- no. 30a Toothpaste Investigation
- no. 30b Toothpaste Investigation (continued)

**PART 1****INTRODUCE SOLIDS**

- How can solids be described?

**Time:** 45 minutes

Students are introduced to a variety of solid materials—cloth, wood, metal, plastic, paper, and rubber. After a period of free exploration students describe the properties of the objects and develop vocabulary in order to communicate those properties.

**PART 2****SORT SOLID OBJECTS**

- In what ways are some solids the same?

**Time:** 45 minutes

Students sort a set of solid objects in a variety of ways to discover similarities among the solids.

**PART 3****CONSTRUCT WITH SOLIDS**

- How can the properties of solids be used?

**Time:** one or two 45–60-minute sessions

Students use solid materials to build structures—towers, bridges, and tunnels—finding the best materials to use for each application.



## CONCEPTS AND PRINCIPLES

## ASSESSMENT OPPORTUNITIES

- Solids are one state of matter.
- Solid materials have properties that separate them from other states of matter.
- We use our senses to observe the properties of solids.

**Preassessment**  
(optional—See Investigation 1 folio)

**Teacher Observation**

Anecdotal Notes

- Solids can be sorted by their properties.
- We use our senses to observe the properties of solids.
- Solid materials have properties that separate them from other states of matter.

**Student Sheet**

*Sorting Circle*

**Properties of Substances.** Understand simple properties of common natural and manufactured materials and objects. (GLE 1.1.1)

- Solid materials have distinct uses based on their properties.
- Engineers are scientists who use their knowledge of materials to design useful objects and structures.

**Teacher Observation**

Problem solving

**Designing and Testing Solutions.** Understand how to construct and test a solution to a problem. (GLE 3.1.2)

### **Examples of questions students might generate for inquiry projects.**

- Which will make the strongest bridge: the cardboard squares, the craft sticks, the straws, or the foil?
- Can I make a tunnel that will not collapse if I build over it?



## INVESTIGATION 1: SOLIDS PART 2: SORT SOLIDS OBJECTS

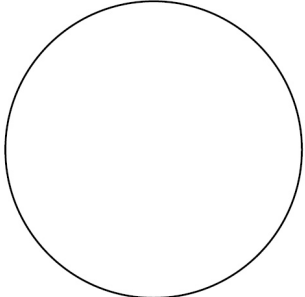
**NOTE:** Anecdotal notes are used to assess students in Part 1 of this investigation.

Use student sheet no. 3 called *Sorting Circle*.

Name \_\_\_\_\_ Date \_\_\_\_\_

**SORTING CIRCLE**

.....



Some solids are: \_\_\_\_\_

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Can be duplicated for classroom or workshop use.

Investigation 1: Solids  
No. 3—Student Sheet  
1st Edition

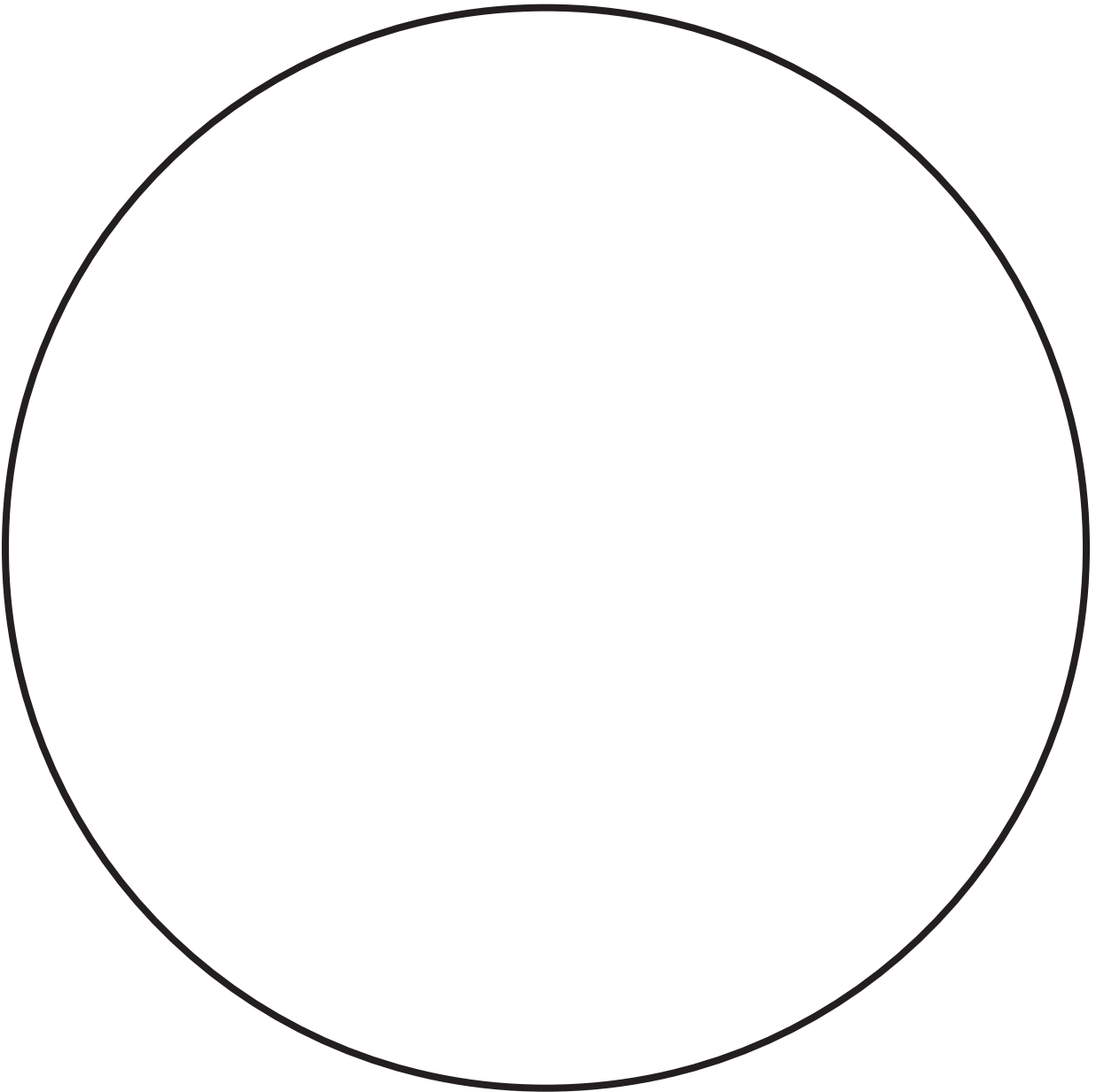
No. 3—Student Sheet

Student Sheet—Sorting Circle	
<b>Properties of Substances.</b> Understand simple properties of common natural and manufactured materials and objects. (GLE 1.1.1)	
Score	If the student...
+	places items in the sorting circle so that all items share a common property.
✓	places items in the sorting circle so that most items share a common property.
–	appears unable to sort by one property.

Name \_\_\_\_\_ Date \_\_\_\_\_

## **SORTING CIRCLE**

.....



Some solids are:\_\_\_\_\_.



## **INVESTIGATION 1: SOLIDS**

### ***PART 3: CONSTRUCT WITH SOLIDS***

Use teacher observation/interview and science notebooks.

As students build towers, conduct 30-second interviews asking students to answer the question, “What properties of the materials helped to make the tower tall? What kind of materials were best for the bottom, which were best for the top?”

<b>Teacher Observation—Problem solving</b>	
<b>Designing and Testing Solutions.</b> Understand how to construct and test a solution to a problem. (GLE 3.1.2)	
<b>Score</b>	<b>If the student...</b>
+	explains properties and tells which properties are better for using at the base (wider, heavier, etc.) and which are better for using at the top (e.g., lightweight).
✓	describes properties of materials that are used in the tower, but doesn’t describe specifics about best top and bottom materials.
–	is unable to describe any properties or gives an irrelevant answer.

Blank Page

**PART 1****LIQUIDS IN BOTTLES**

- How do liquids differ from each other?

**Time:** 60–75 minutes or two 40 minute sessions

Students investigate different liquids to develop their concept of a liquid. They work at learning centers to tip, swirl, shake, roll, and otherwise investigate seven liquids in small, clear plastic bottles: plain water, corn syrup, liquid detergent, liquid hand soap, oil, fabric softener, and colored water.

**PART 2****PROPERTIES OF LIQUIDS**

- How do liquids differ from each other?

**Time:** 45 minutes

Students describe properties of liquids. Their descriptive language is used as a springboard to develop precise vocabulary for properties of liquids. Vocabulary is practiced with liquid-vocabulary card games.

**PART 3****LIQUID LEVEL**

- How do liquids flow when a bottle is tipped upside down?
- How does the same amount of liquid look in various shapes of containers?
- In what ways are all liquids the same?

**Time:** 60–75 minutes or two 40 minute sessions

Students observe liquids in different containers. They explore the concept that liquids have level surfaces. Students who are not at the center reinforce the concept of liquid levels with a representational puzzle and observe and record the shape of liquid in a bottle as the bottle rotates. To wrap up their investigations with liquids, students construct a definition of liquids and refine their original definition of solids.



## CONCEPTS AND PRINCIPLES

## ASSESSMENT OPPORTUNITIES

- Liquids are one state of matter.
- Liquids have many properties.
- Liquids pour and flow.

### Teacher Observation

Anecdotal Notes

- Liquids have many properties.

### Teacher Observation

New vocabulary

**Communicating.** Understand how to record and report investigations, results, and explanations. (GLE 2.1.5 )

- Liquids pour and flow.
- Liquids take the shape of their container.
- The surface of liquid is level with respect to the ground.
- Solids and liquids have distinct properties that separate them as two states of matter.

### Student Sheets

*Liquids in Containers*

*Liquid Level in a Bottle*

*Falling-Bottle Puzzle*

**Nature & Properties of Earth Materials.** Understand physical properties of Earth materials. (GLE 1.1.5)

**Communicating.** Understand how to record and report investigations, results and explanations. (GLE 2.1.5)

### Examples of questions students might generate for inquiry projects.

- How many different-shaped containers can I find that hold exactly the same amount of water?
- Can I make a collection of liquids to demonstrate the different properties? (from Parts 1 and 2)



## INVESTIGATION 2: LIQUIDS

### PART 2: PROPERTIES OF LIQUIDS

Use teacher observation to assess students' use of new vocabulary.

**NOTE:** *Anecdotal notes are used to assess students in Part 1 of this investigation.*

Teacher Observation—New vocabulary	
<b>Communicating.</b> Understand how to record and report investigations, results, and explanations. (GLE 2.1.5)	
Score	If the student...
+	uses vocabulary accurately while playing <i>Memory</i> and <i>Go Fish</i> .
✓	uses vocabulary accurately most of the time while playing card games.
–	has difficulty applying the new vocabulary.

# INVESTIGATION 2: LIQUIDS

## PART 3: LIQUID LEVEL

Use student sheets nos. 17, 18, and 19 called *Liquids in Containers*, *Liquid Level in a Bottle*, and *Falling-Bottle Puzzle*.

### Student Sheets—Liquids in Containers

**Communicating.** Understand how to record and report investigations, results, and explanations. (GLE 2.1.5 )

Score	If the student...
+	records all observations accurately.
✓	records most observations accurately.
–	needs help with recording observations.


### Student Sheets—Liquid Level in a Bottle and Falling-Bottle Puzzle

**Nature & Properties of Earth Materials.** Understand physical properties of Earth materials. (GLE 1.1.5)

Score	If the student...
+	shows consistently that the surface of the water is always parallel to the ground.
✓	shows the surface of the water parallel to the ground in all but one or two cases.
–	shows consistently that the surface of the water changes in reference to the bottle rather than the ground.

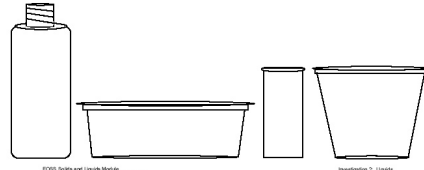
Name \_\_\_\_\_ Date \_\_\_\_\_

**LIQUIDS IN CONTAINERS**



Small vial

- Put one small vial of water in each container.
- Draw the level of the water in each container.

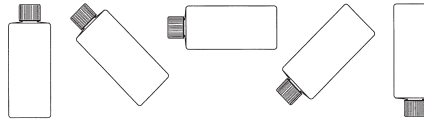


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Investigation 2: Liquids  
No. 17—Student Sheet  
WA Edition

Name \_\_\_\_\_ Date \_\_\_\_\_

**LIQUID LEVEL IN A BOTTLE**




Draw what the liquid looks like in each picture as the bottle turns upside down.

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Investigation 2: Liquids  
No. 18—Student Sheet  
WA Edition

Name \_\_\_\_\_ Date \_\_\_\_\_

**FALLING-BOTTLE PUZZLE**



- Cut out the six bottles on the dashed lines.
- Put them in order, showing how the bottle falls over onto its side.

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Investigation 2: Liquids  
No. 19—Student Sheet  
WA Edition

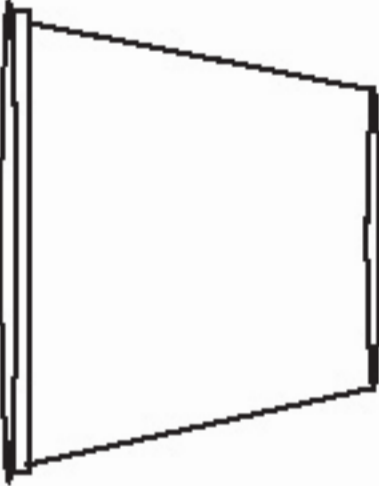
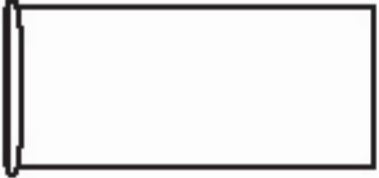


Nos. 17–19—Student Sheets

Name \_\_\_\_\_ Date \_\_\_\_\_  
**LIQUIDS IN CONTAINERS**.....

1. Put one small vial of water in each container.
2. Draw the level of the water in each container.



Small vial

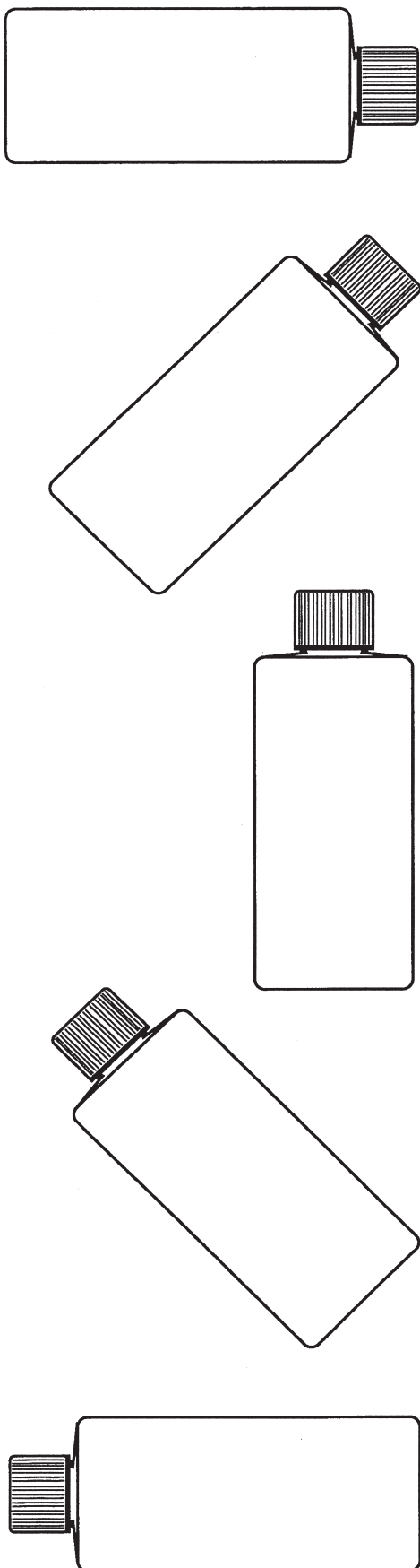


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Investigation 2: Liquids  
No. 17—Student Sheet  
WA Edition

Name \_\_\_\_\_ Date \_\_\_\_\_

**LIQUID LEVEL IN A BOTTLE** .....



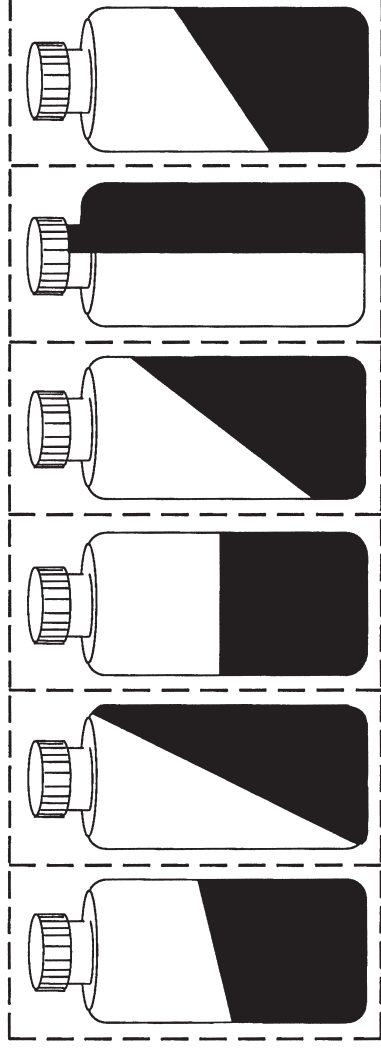
Draw what the liquid looks like in each picture as the bottle turns upside down.

Name \_\_\_\_\_

Date \_\_\_\_\_

## FALLING-BOTTLE PUZZLE

.....



1. Cut out the six bottles on the dashed lines.
2. Put them in order, showing how the bottle falls over onto its side.

Blank Page

**PART 1****SOLIDS IN CONTAINERS**

- Are these materials solids or liquids?

**Time:** 60–75 minutes or two 40 minute sessions

Students work in learning centers with solid materials representing five particle sizes: cornmeal, rice, and three different beans. Students investigate the properties of the materials, one at a time, by pouring them from one container to another.

**PART 2****SEPARATING SOUP MIX**

- How can mixtures of solid particles be separated?

**Time:** 60–75 minutes or two 40 minute sessions

Students use screens of three sizes to separate a mixture of five solid materials.

**PART 3****SOLIDS IN BOTTLES**

- How do particles of solids move in bottles?

**Time:** 60–75 minutes or two 40 minute sessions

Students use funnels to put the five solid materials into clear bottles with caps. They observe how the particulate materials look, sound, and move when the students shake and roll the bottle.

**PART 4****SEPARATING BEADS WITH A SCREEN**

- How do you know which screens to use for separating a mixture of solids?

**Time:** 30–40 minutes

Students work with representational materials to demonstrate their understanding of the use of screens to separate mixtures. They look at representations of bead mixtures and select a representation of a screen that could be used to separate the mixture.



## CONCEPTS AND PRINCIPLES

## ASSESSMENT OPPORTUNITIES

- Solid materials come in all sizes and shapes.
- Particles of solid materials can pour like liquids, but each particle maintains its shape.
- Solid materials can support denser materials on their surface.

### Teacher Observation

Anecdotal Notes

- Mixtures of solid particles can be separated with a screen.
- Solid materials come in all sizes and shapes.

### Teacher Observation

Sorting by size

### Planning and Conducting Safe Investigations.

Understand how to plan and conduct simple investigations following all safety rules. (GLE 2.1.2)

- Senses of sight, hearing, and touch can be used to observe the properties of materials.
- Particles of solid materials can pour like liquids, but unlike liquids they maintain their shape.
- The behavior of small solids has similarities to and differences from that of liquids.

### Teacher Observation

Anecdotal Notes

- Mixtures of solid particles can be separated with a screen.

### Student Sheets

*Bead Mix A*

*Bead Mix B*

**Evaluating Potential Solutions.** Understand how well how well a design or a product solves a problem. (GLE 3.1.3)

### Examples of questions students might generate for inquiry projects.

- Can I find another way to sort the mixture of solid particles?



## INVESTIGATION 3: BITS AND PIECES

### PART 2: SEPARATING SOUP MIX

**NOTE:** *Anecdotal notes are used to assess students in Parts 1 and 3 of this investigation.*

Use teacher observation to assess how students use the screens to sort the different sized materials.

Teacher Observation—Sorting by size	
<b>Planning and Conducting Safe Investigations.</b> Understand how to plan and conduct simple investigations following all safety rules. (GLE 2.1.2)	
Score	If the student...
+	uses the screens systematically to sort the different sized materials.
✓	successfully sorts the materials, but is less systematic about the process.
–	cannot sort the materials using the screens.

# INVESTIGATION 3: BITS AND PIECES

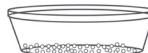
## PART 4: SEPARATING BEADS WITH A SCREEN


Use student sheets no. 24 and 25 called *Bead Mix A* or *Bead Mix B*.

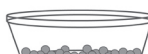
Student Sheet—Bead Mix A or Bead Mix B	
<b>Evaluating Potential Solutions.</b> Understand how well a design or a product solves a problem. (GLE 3.1.3)	
Score	If the student...
+	easily matches sizes of screens to beads.
✓	needs some help to match sizes of screens to beads.
–	cannot match screens to bead sizes.

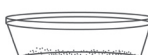
Name \_\_\_\_\_ Date \_\_\_\_\_

**BEAD MIX A**

 Which screens can these beads go through?  
\_\_\_\_\_

 Which screens can these beads go through?  
\_\_\_\_\_

 Which screens can these beads go through?  
\_\_\_\_\_

 Which screens can these beads go through?  
\_\_\_\_\_


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Investigation 3: Bits and Pieces  
No. 24—Student Sheet  
WA Edition

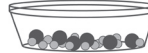
No. 24—Student Sheet


Name \_\_\_\_\_ Date \_\_\_\_\_

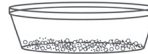
**BEAD MIX B**

 Which screen can separate this mixture?  
\_\_\_\_\_

 Which screen can separate this mixture?  
\_\_\_\_\_

 Which screen can separate this mixture?  
\_\_\_\_\_

 Which screen can separate this mixture??  
\_\_\_\_\_

 Which screen can separate this mixture??  
\_\_\_\_\_

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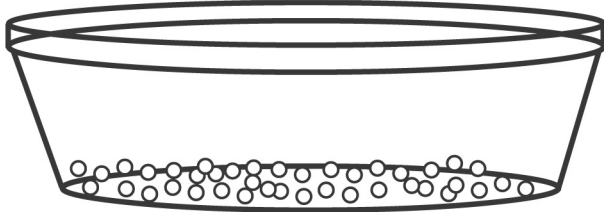
Investigation 3: Bits and Pieces  
No. 25—Student Sheet  
WA Edition

No. 25—Student Sheet

Name \_\_\_\_\_ Date \_\_\_\_\_

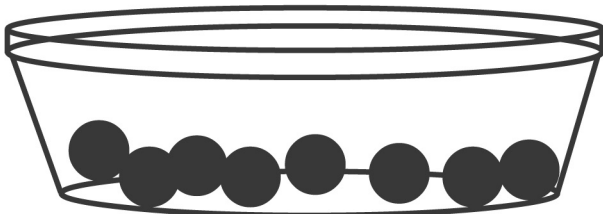
## BEAD MIX A

.....



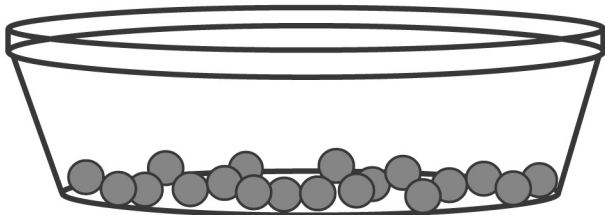
Which screens can these beads go through?

\_\_\_\_\_



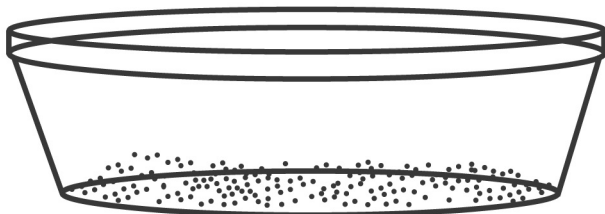
Which screens can these beads go through?

\_\_\_\_\_



Which screens can these beads go through?

\_\_\_\_\_



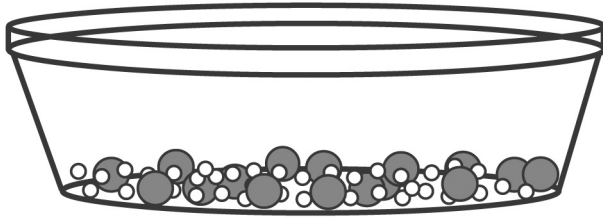
Which screens can these beads go through?

\_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

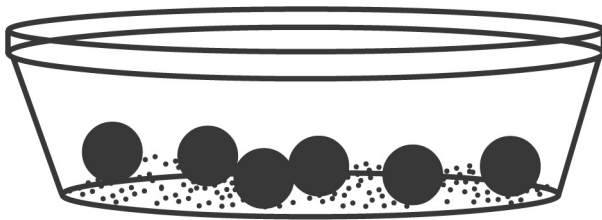
## BEAD MIX B

.....



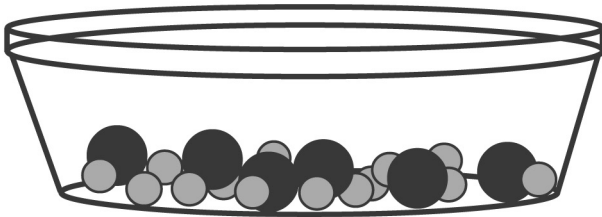
Which screen can  
separate this mixture?

\_\_\_\_\_



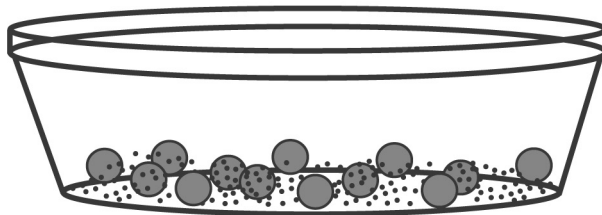
Which screen can  
separate this mixture?

\_\_\_\_\_



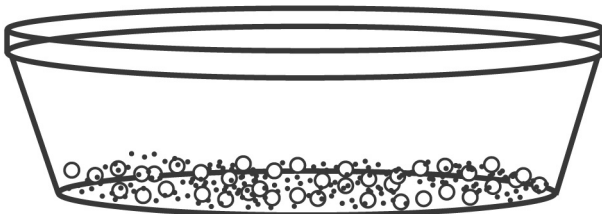
Which screen can  
separate this mixture?

\_\_\_\_\_



Which screen can  
separate this mixture??

\_\_\_\_\_



Which screen can  
separate this mixture??

\_\_\_\_\_

**PART 1****SOLIDS AND WATER**

- What happens when different solids are mixed with water?
- How can a mixture of water and solids be separated?

**Time:** Three 45-minute sessions

Students investigate mixtures made of water and familiar solid materials. They observe and discuss the changes that occur immediately and set the mixtures aside for a day. Students observe the mixtures, note changes, and graph the changes. They attempt to return the solids to their starting condition by drying.

**PART 2****LIQUIDS AND WATER**

- What happens when water is mixed with different liquids?

**Time:** 45 minutes + 20 minutes the next day

Students add water to bottles of familiar liquids. They observe changes that occur immediately, then tip the bottles gently, and finally shake them vigorously. The results of the mixing are observed and recorded after a day of settling.

**PART 3****TOOTHPASTE INVESTIGATION**

- Is toothpaste a solid, a liquid, a mixture, or some other form of matter?

**Time:** 45 minutes + 20 minutes the next day

Students apply their knowledge of solids and liquids to determine if toothpaste is solid or liquid.



## CONCEPTS AND PRINCIPLES

## ASSESSMENT OPPORTUNITIES

- Some solids change when mixed with water; others do not.
- Some solids dissolve in water; evaporation leaves the solid behind.
- Water can be separated from a mixture through evaporation.

### Science Notebook

Evaporation

**Explaining.** Understand how to construct a reasonable explanation using evidence. (GLE 2.1.3)

- Some liquids mix with water.
- Some liquids form a layer above or below water.

### Student Sheet

*Liquid with Water*

**Communicating.** Understand how to record and report investigations, results, and explanations. (GLE 2.1.5)

- Some materials have properties of both solids and liquids.
- Scientists test materials in many ways in order to compare them to what is known.

### New Student Sheets

*Toothpaste Investigation*

*Toothpaste Investigation (continued)*

**Planning and Conducting Safe Investigations.** Understand how to plan and conduct simple investigations following all safety rules. (GLE 2.1.2)

**Explaining.** Understand how to construct a reasonable explanation using evidence. (GLE 2.1.3)

### Examples of questions students might generate for inquiry projects.

- What will happen if \_\_\_\_\_ were put in water? (Student selects other materials to try.)
- Is peanut butter a solid or liquid?
- What happens when liquid soap (or other materials student selects) is put into the freezer? Does it turn into a solid?

(Note: make predictions before testing materials.)



## INVESTIGATION 4: SOLIDS AND LIQUIDS WITH WATER

### PART 1: SOLIDS AND WATER

Use science notebook responses to assess students' understanding of evaporation.

**Notebook Prompt:**

*The materials were wet when you put them into the dishes. What happened to the water?*

Science Notebook—Evaporation	
<b>Explaining.</b> Understand how to construct a reasonable explanation using evidence. (GLE 2.1.3)	
Score	If the student...
+	notes liquid has disappeared and describes this as a change of state (the liquid turned into a gas); describes the process of evaporation.
✓	notes the liquid is gone; uses the word <i>evaporation</i> to describe what has happened to the liquid, but cannot fully explain what evaporation is.
–	notes that there has been a change—the liquid is gone— shows no other understanding.

# INVESTIGATION 4: SOLIDS AND LIQUIDS WITH WATER




## PART 2: LIQUIDS AND WATER

Use the student sheet no. 29 called *Liquid with Water*.

Student sheet—Liquid with Water	
<b>Communicating.</b> Understand how to record and report investigations, results, and explanations. (GLE 2.1.5)	
Score	If the student...
+	accurately records all observations.
✓	records most observations accurately.
–	needs help to record observations.

Name \_\_\_\_\_ Date \_\_\_\_\_

**LIQUID WITH WATER** .....

1. Add water. How does it look? _____ _____	2. Shake it. How does it look? _____ _____	3. Let it sit over night. How does it look the next day? _____ _____
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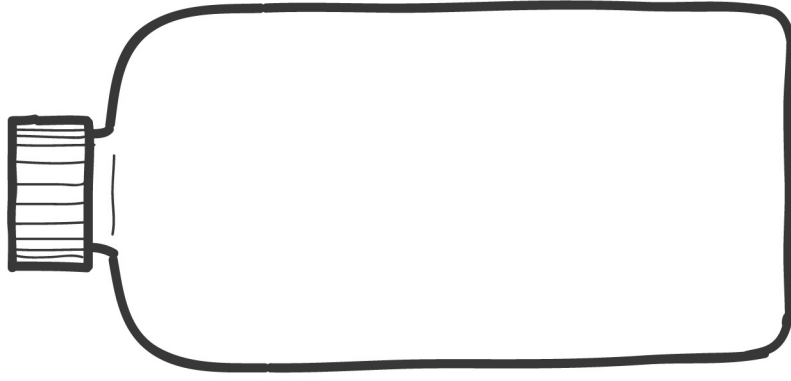
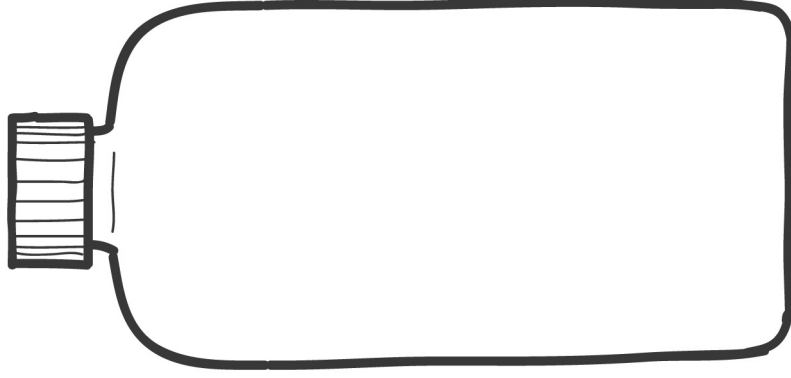
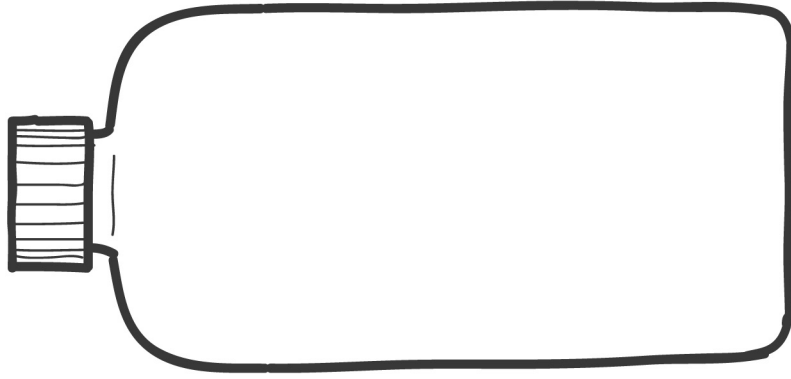
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Investigation 4: Solids and Liquids with Water  
No. 29—Student Sheet  
WA Edition

No. 29—Student Sheet

Name \_\_\_\_\_ Date \_\_\_\_\_

# LIQUID WITH WATER.....



<p>1. Add water. How does it look?</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>2. Shake it. How does it look?</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>3. Let it sit over night. How does it look the next day?</p> <p>_____</p> <p>_____</p> <p>_____</p>
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# INVESTIGATION 4: SOLIDS AND LIQUIDS WITH WATER

## PART 3: TOOTHPASTE INVESTIGATION

Use new student sheets nos. 30a and 30b called *Toothpaste Investigation* and *Toothpaste Investigation (continued)* to model an inquiry project. The abilities of your group will dictate how much guidance you need to provide.

**Note:** A conclusion drawn from an investigation should directly answer the question or assess the prediction. As a class, you will want to utilize the information gathered from the students' investigations to discuss their predictions about whether the results indicate toothpaste is a solid, a liquid or both.

### New Student Sheet—Toothpaste Investigation, Parts 1 & 2

**Planning and Conducting Safe Investigations.** Understand how to plan and conduct simple investigations following all safety rules. (GLE 2.1.2)

Score	If the student...
+	can complete the plan independently.
✓	can complete one or more sections of the investigation on their own and is able to follow procedures given for the other sections.
–	is not able to complete one or more sections of the investigation on their own and/or is not able to follow procedures given for the other sections.

### New Student Sheet—Toothpaste Investigation (continued), Part 3

**Explaining.** Understand how to construct a reasonable explanation using evidence. (GLE 2.1.3)

Score	If the student...
+	correctly identifies whether their prediction is correct or incorrect and cites information from their results table.
✓	correctly identifies whether their prediction is correct or incorrect.
–	does not correctly identify whether their prediction is correct or incorrect.

Name \_\_\_\_\_ Date \_\_\_\_\_


**TOOTHPASTE INVESTIGATION**

Part 1:

Question: What happens to the toothpaste when \_\_\_\_\_

Prediction: I think the toothpaste \_\_\_\_\_

Materials: (Draw or list materials)

1. Toothpaste 

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

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Investigation 4: Solids and Liquids with Water  
No. 30a—New Student Sheet  
WA Edition

No. 30a—New Student Sheet

Name \_\_\_\_\_ Date \_\_\_\_\_

**TOOTHPASTE INVESTIGATION (continued)**

Part 2:

1. How much toothpaste did you use? \_\_\_\_\_

2. What did you do with the toothpaste? \_\_\_\_\_

3. What did you observe? \_\_\_\_\_

Results: (Draw or describe what happened to the toothpaste)

Start of Investigation	End of Investigation

Part 3:

Conclusion: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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Investigation 4: Solids and Liquids with Water  
No. 30b—New Student Sheet  
WA Edition

No. 30b—New Student Sheet

Name \_\_\_\_\_ Date \_\_\_\_\_

## TOOTHPASTE INVESTIGATION

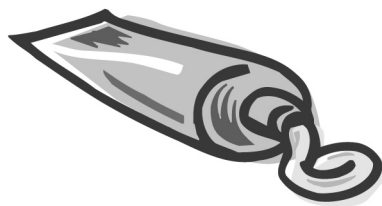
Part 1:

Question: What happens to the toothpaste when

Prediction: I think the toothpaste \_\_\_\_\_

Materials: (Draw or list materials)

1. Toothpaste



2.

3.

4.

Name \_\_\_\_\_ Date \_\_\_\_\_

## TOOTHPASTE INVESTIGATION (continued).....

### Part 2:

1. How much toothpaste did you use? \_\_\_\_\_

2. What did you do with the toothpaste? \_\_\_\_\_

3. What did you observe? \_\_\_\_\_

Results: (Draw or describe what happened to the toothpaste.)

Start of Investigation	End of Investigation

### Part 3:

Conclusion:

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## END-OF-MODULE ASSESSMENT

This assessment is used as an evaluative tool after all the investigations have been completed. Below are the materials you will need if you use the performance assessments.

### **MATERIALS FOR THE PERFORMANCE ASSESSMENT**

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- 3 Cups, plastic
- 1 Solid
- 1 Liquid
- 1 Solid (bits)
  - Cup labels (paper, tape, marking pen) \*
- ☐ • Assessment sheet no. 4 called *Performance Assessment*

### **MATERIALS FOR THE WRITTEN ASSESSMENT**

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- ☐ • Assessment sheets no. 5–7 called *Written Assessment*

\* Supplied by the teacher

- ☐ Use the duplication master to make copies.

## **GETTING READY**

### **1. SCHEDULE THE ASSESSMENT**

You may need to give the assessment in two sessions: one for the performance items and one for the written items. Read through Steps 2 and 3 below before deciding how you will proceed.

### **2. ADMINISTER THE PERFORMANCE TASK**

Set up one or several identical assessment stations around the classroom. Place the three plastic cups at the station. Label them "1," "2," and "3." Pour liquid in cup 1 about half full. Pour small bits of a solid such as rice or cornmeal (or something you bring in that students haven't seen before) in cup 2. Place a solid object in cup 3. On the student sheet, students identify the objects in each cup by telling if they are solid or liquid and why. If you are working with young students who have not yet developed adequate writing skills, you may want to conduct an interview instead, and write what students dictate on the student sheet.

Plan another activity for students who are waiting their turn to work at the assessment station.

### **3. ADMINISTER THE WRITTEN ITEMS**

Assessment items in content areas such as science usually require a high level of reading. If you feel that students will have a difficult time reading the items on their own, make an overhead transparency and read each item and its possible answers (when appropriate) aloud. Have students mark their answers and move on to the next item, working together through the assessment, item by item.

Some second graders may be able to complete the written items on their own. In this case, you can have them work on the written items until it is their turn to work at the performance station.



### SCORING THE ASSESSMENTS

#### PERFORMANCE ASSESSMENT

Give students a + if they identify the objects in the cups—(1) a liquid, (2) solids, and (3) a solid—and give a brief explanation that describes the properties that identify each type of matter.

Give students a ✓ if they identify the objects in the cups—(1) a liquid, (2) solids, and (3) a solid—and give a partial explanation that describes the properties that identify each type of matter.

Give students a – if they are unable to distinguish between solids and liquids.

**WRITTEN ASSESSMENT**

**Item 1.** In one circle students should group 1, 4, and 6 together because they are all round. In another circle they should group 2, 3, and 8 together because they all have four sides (are rectangles). In the third circle they should group 5 and 7 because they each have three sides (are triangles).

**Item 2.** Students should mention something about adding heat to receive a +. If they suggest leaving the ice cube out of the freezer, give them a ✓

**Item 3.** Students should mention something about taking heat away, or cooling the water, to receive a +. If they suggest putting water in the freezer, give them a ✓

**Item 4.** It evaporates (+) or disappears (✓).

**Item 5.** Students draw a picture of a solid and a liquid and tell something about what makes them different. For example, a solid keeps its shape, but a liquid takes the shape of the container. If you leave a solid out, it won't change, but the liquid would disappear.



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# SOLIDS AND LIQUIDS BLUEPRINT

## K-2 Grade Level Expectations (GLE) Assessment Opportunities

SYSTEMS	FORMATIVE	SUMMATIVE	COMMENTS
<b>Properties of Substances.</b> Understand simple properties of common natural and manufactured materials and objects. (GLE 1.1.1)	Inv. 1, Pt. 2	1, 5	Covered in several other modules.
<b>Nature and Properties of Earth Materials.</b> Understand physical properties of Earth materials. (GLE 1.1.5)	Inv. 2, Pt. 3		Covered in several other modules.
<b>INQUIRY</b>			
<b>Planning and Conducting Safe Investigations.</b> Understand how to plan and conduct simple investigations following all safety rules. (GLE 2.1.2 )	Inv. 3, Pt. 2 Inv. 4, Pt. 3	Performance Assessment	Assessed throughout grades in inquiry projects.
<b>Explaining.</b> Understand how to construct a reasonable explanation using evidence. (GLE 2.1.3 )	Inv. 4, Pt. 1, 3	Performance Assessment	Assessed throughout grades in inquiry projects.
<b>Communicating.</b> Understand how to record and report investigations, results, and explanations. (GLE 2.1.5)	Inv. 2, Pt. 2, 3 Inv. 4, Pt. 2	Performance Assessment	Assessed throughout grades in inquiry projects.
<b>APPLICATIONS</b>			
<b>Designing and Testing Solutions.</b> Understand how to construct and test a solution to a problem. (GLE 3.1.2)	Inv. 1, Pt. 3		Important to cover in this module.
<b>Evaluating Potential Solutions.</b> Understand how well a design or a product solves a problem. (GLE 3.1.3)	Inv. 3, Pt. 4		Important to cover in this module.
<b>INQUIRY OR DESIGN PROJECT</b>			
<b>Investigating Systems: GLEs 2.1.1—2.1.5 or Designing Solutions: GLEs 3.1.1—3.1.3</b>	Projects		Important to do one project per module.

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